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THIRD PROGRESS REPORT

SAN JOAQUIN PROJECT

Forest Insect Field Station  
Northfork, Calif.  
December 10, 1924.

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THIRD PROGRESS REPORT - SAN JOAQUIN PROJECT.

CONTROL WORK, SEASON OF 1924.

Cooperation - Sugar Pine Lumber Company:

Because of a considerable increase in the infestation of the sugar pine stands in the vicinity of Whiskey Creek and Ellis Meadow during the 1922 and 1923 seasons, control work was recommended on this tract in the second progress report of February 1924. This work was not proposed as an experimental feature of the project but for protective reasons only as the losses threatened valuable holdings both of the Sierra National Forest and the Sugar Pine Lumber Company.

Control work was carried out during the period from April 28 to May 24 by the crew that carried out the spring work in the Chiquito District. This work was covered by a report of May 30, 1924, a copy of which was sent to the Sugar Pine Lumber Company. This report included the following data:

Area Covered -----	9,600 Acres
Stand Protected -----	384,000 M.B.M.
No. Trees Treated -----	54
Volume Treated -----	366,110 Board Ft.
Cost per M.B.M. -----	\$2.18

The costs of this work were distributed according to the ownership of the infested timber treated. On this basis the Forest Service contributed \$656.40 and the Sugar Pine Lumber Company, \$190.35.

### Experimental Control Work:

#### Completion of Trap Tree Experiment-

During 1922 considerable effort was concentrated upon trap tree work to prove whether this method was effective in holding endemic infestations and preventing increases. Results of this work were followed up during the season of 1923 and conclusions have been summarized in a special report submitted under date of November 18, 1924. The results apparently demonstrated conclusively that trap trees when employed on a small scale are of but little use in materially reducing endemic losses or preventing increases. All trap tree work was abandoned during the season of 1924 as the use of traps on a scale large enough to have any affect was considered impracticable.

#### Spring and Summer Work - 1924.

Both spring and summer work was continued on three units of the Chiquito Basin. These were 26A (Logan), 26B (Forked Meadow), 26C (West Chiquito).

A very thorough working over of these units was made during the spring and a high percent of the overwintering infestation was treated on all parts of the area.

Summer work was confined almost entirely to the extermination experiment in Unit 26B. This unit as well as the others which were worked contained less overwintering infestation in the spring of 1924 than in 1923. A special effort was made to treat the highest percent possible of the overwintering infestation on Unit 26B. All trees that could be located in the fall work of 1923 were treated. In February 1924 the unit was again cruised

and all trees treated that could be located within the unit. A final cleaning was made in April 1924 and up to the time that the first attacks of the summer generation occurred in 1924 this unit was practically clear of infested trees.

The summer control work was concentrated on this unit as it was considered that more information of direct value would be gained by following up closely the results of the extermination work and attempting to keep the unit clear of reinfestation than by spreading the summer control work over the Chiquito Basin. In fact the effect of the control work on the units treated by less intensive methods was already becoming apparent and results would be fairly definitely settled by the developments of the 1924 infestation.

Intensive control work was kept up on Unit 26B until September 1. By that time it was apparent that the unit was being reinfested to about the same extent as the rest of the area and further work to demonstrate the feasibility of extermination by present methods or even holding the infestation on this area seemed useless.

The costs of the control work of this season are shown in Table IV. and the detail of the experimental work in Table V.

#### PLANS FOR FURTHER WORK.

A review of the entire project will be made in a separate report which will give the results now available and suggest further lines of study. It is the purpose of this progress report to give the data for the 1924 control work and to consider only such plans as are essential to the completion

of the project as originally planned. According to the original plan control work was to be extended over a period of five years ending with the 1924 season. The final results of the project will be evident when complete returns on the 1924 infestation are in. A cruise of the entire project area during the spring and summer of 1925 will be necessary for the final completion of the project.

Out of the \$1,100 allotted for this project during the fiscal year 1925, approximately \$500 has been spent, leaving a balance of about \$600.

The check cruising of the project has been carried out by the Bureau of Entomology each season, the Bureau carrying the salaries and the Forest Service the field expense. Much of this cruising, especially on the Chiquito units has been carried out along with the control work. As control work will now be discontinued the next cruise of the area will have to be carried out as a special line of work.

It is planned to complete this cruise during the period from April 1, to June 30. The field expense is estimated at \$500. The present balance now available on the project fund is therefore ample to complete this phase of study.

TABLE I.

COST OF PROJECT TO DATE.

						Totals for Season			
Season	Period	No. Trees	Volume	Cost	Cost Per M.B.M.	No. Trees	Bd. Measure	Cost	Cost Per M.B.M.
1920	Spring Work	375	715,450	\$4,909.15	\$6.86	713	1,304,960	\$7,135.06	\$5.46
	Summer Work	338	589,510	\$2,225.91	\$3.78				
1921	Spring Work					462	694,470	\$3,709.07	\$5.33
	Summer Work	462	694,470	\$3,709.07	\$5.33				
1922	Spring Work	101	144,530	\$ 864.50	\$5.85	391	420,230	\$3,062.25	\$7.25
	Summer Work	290	275,700	\$2,215.76	\$8.04				
1923	Spring Work	240	299,140	\$1,800.93	\$6.02	416	567,650	\$3,831.90	\$6.75
	Summer Work	176	266,510	\$2,030.97	\$7.56				
1924	Spring Work	57	79,600	\$ 519.22	\$6.53	137	182,970	\$1,579.35	\$8.63
	Summer Work	80	103,370	\$1,060.11	\$10.25				

137 182,970

TABLE II.

CHARACTER OF TIMBER TREATED.

Season	<u>Standing Trees</u>		:	<u>Windfalls</u>		:	<u>Trap Trees</u>		:	<u>Totals</u>	
	No. Trees	Vol. Bd. Measure		No. Trees	Vol. Bd. Measure		No. Trees	Vol. Bd. Measure		No. Trees	Vol. Bd. Measure
1920	467	888,280	:	90	209,660	:	156	216,020	:	713	1,304,960
1921	203	451,310	:	44	113,390	:	215	129,770	:	462	694,470
1922	278	392,970	:			:	113	27,260	:	391	420,230
1923	355	551,060	:	2	3,500	:	59	13,090	:	416	567,650
1924	137	182,970	:			:			:	137	182,970

TABLE III.

SUMMARY OF ANNUAL LOSSES

Standing Trees Killed, 1919-1923.

Year	Northfork District		:	Chiquito District		:	Total Entire Area	
	No. Trees	Volume	:	No. Trees	Volume	:	No. Trees	Volume
<u>Yellow Pine (D. brevicornis)</u>								
1919	828	1,157,530	:	614	1,036,590	:	1442	2,194,120
1920	433	812,170	:	308	483,580	:	741	1,295,750
1921	579	951,420	:	564	897,910	:	1143	1,849,330
1922	842	1,517,900	:	727	1,154,000	:	1569	2,671,900
1923	693	1,058,450	:	450	710,600	:	1143	1,769,050
Total	3375	5,497,470	:	2663	<del>4,282,680</del> 3,244,080	:	6038	<del>9,780,150</del> 8,741,550
<u>Sugar Pine (D. monticola)</u>								
1919	74	502,300	:	105	344,370	:	179	846,670
1920	56	250,430	:	81	255,040	:	137	505,470
1921	148	679,430	:	82	177,840	:	230	857,270
1922	383	2,458,140	:	87	191,160	:	470	2,649,300
1923	239	1,156,750	:	81	225,250	:	320	1,382,000
Total	900	5,047,050	:	436	1,193,660	:	1336	6,240,710
<u>Jeffrey Pine (D. jeffreyi and melanophila sp.)</u>								
1919	19	41,570	:	27	37,770	:	46	79,340
1920	31	51,930	:	71	104,220	:	102	156,150
1921	43	72,730	:	138	159,350	:	181	232,080
1922	73	149,050	:	155	178,840	:	228	327,890
1923	36	91,540	:	126	146,440	:	162	237,980
Total	202	406,820	:	517	626,620	:	719	1,033,440
TOTALS FOR								
ALL SPECIES-4477	10,951,340		:	3616	5,064,360	:	8093	16,015,700

TABLE IV.

## SAN JOAQUIN INSECT CONTROL PROJECT - SIERRA NATIONAL FOREST.

Yellow Pine Killed Annually by Western Pine Beetle with Volume and Percent of Loss Treated  
by Control Work, 1919 to 1920 Inclusive.

Unit District	1919					1920					1921					1922					1923				
	Annual Loss		Volume Treated		%	Annual Loss		Volume Treated		%	Annual Loss		Volume Treated		%	Annual Loss		Volume Treated		%	Annual Loss		Volume Treated		%
	Trees	Volume	Trees	Volume		Trees	Volume	Trees	Volume		Trees	Volume	Trees	Volume		Trees	Volume	Trees	Volume		Trees	Volume	Trees	Volume	
Hogan Ranch 24a	: 88	153,010				: 70	131,530	12	31,650	24.01:	103	153,780				: 703	358,180				: 170	228,950			
Northfork 24b	: 386	386,590	101	145,830	37.75:	136	261,700	61	118,220	45.22:	202	271,790	39	22,500	8.28:	1296	399,690				: 225	294,140			
Rock Creek 29	: 56	115,320	5	14,210	10.58:	48	79,600				: 101	201,720				: 135	290,840				: 89	129,350			
Ellis Meadow 30	: 50	164,190				: 69	142,230	17	27,240	19.03:	57	103,810	11	24,120	23.23:	129	330,560				: 64	204,560			
Crane Valley	: 248	338,420	58	96,490	28.50:	110	163,930	45	50,930	31.08:	116	220,120	10	21,910	9.95:	79	138,630				: 145	201,450			
Total	: 828	1,157,930	164	254,530	22.00:	433	778,990	141	228,060	29.15:	579	951,420	60	68,530	7.20:	842	1,917,900				: 693	1,058,450			
Chiquito District																									
Logan Meadow 26a	: 110	109,050	28	53,390	48.92:	40	60,020	12	20,630	34.38:	90	133,270	56	81,580	61.13:	154	222,090	78	108,280	48.80:	: 65	72,880	23	33,450	45.90
Forked Meadow 26a	: 88	142,140	29	59,130	41.62:	52	73,180	23	32,540	40.50:	101	150,810	56	81,810	54.23:	99	120,850	82	108,670	89.92:	: 67	78,110	49	61,530	78.72
West Chiquito 26a	: 94	150,240	18	44,760	29.80:	29	40,070	7	6,830	17.07:	92	152,270	67	42,510	27.91:	127	193,660	60	82,640	42.65:	: 125	189,830	41	74,860	39.45
Arnold Meadow 27	: 38	158,020	1	8,500	5.38:	33	64,190	3	5,670	8.85:	44	89,920	8	12,130	13.48:	39	87,480	16	37,380	42.72:	: 51	129,350	6	8,430	6.52
Jackass Creek 27a	: 85	132,200	9	17,930	13.56:	76	145,250				: 115	216,990	4	7,260	3.34:	214	363,040	6	4,510	1.24:	: 77	151,540			
Puller's 28	: 20	33,880	12	16,600	49.00:	9	13,500				: 26	28,690	12	19,380	67.57:	13	20,950	2	3,730	17.83:	: 7	11,760	1	2,300	19.57
Dalton Meadow 28a	: 150	255,750	52	97,300	38.03:	52	66,070	3	7,380	11.17:	90	116,230	59	72,860	62.70:	61	123,370	3	16,800	13.62:	: 45	52,300			
Kaiser Creek	: 29	55,310	5	9,490	17.16:	17	21,300	7	5,270	24.75:	6	9,730				: 20	22,560				: 13	24,830			
Total	: 614	1,036,590	154	307,100	29.65:	308	483,580	55	78,320	16.20:	564	897,910	262	317,530	35.35:	727	1,154,000	247	362,010	31.37:	: 450	710,600	120	180,570	25.43

TABLE V.

STATEMENT OF COSTS - SEASON OF 1924.

Control Work - Chiquito District.

Area Treated -----	19,120	Acres.
Stand Protected -----	210,974,000	Bd. Ft.
Total Cost of Control Work -----	\$1,579.33	
No. of Trees Treated -----	137	
Volume (B.F.) -----	182,970	Bd. Ft.
Cost per Acre -----	.082	
Cost per Tree -----	\$11.52	
Cost per A.B.M. Treated -----	\$ 8.63	

<u>Detail of Costs</u>	<u>Spring</u>	<u>Summer</u>	<u>Total</u>
Wages and Salaries -----	406.94	\$784.38	\$1,191.32*
Subsistence -----	77.83	240.73	318.61
Hire of Pack Stock -----	6.00	--	6.00
Feed for Pack Stock -----	10.00	6.00	16.00
Transportation by Car (Mileage & Gas) -----	8.40	19.00	27.40
Depreciation on Equipment -----	10.00	10.00	20.00
	\$519.22	\$1,060.11	\$1,579.33

Total number of man days ---- 295

Total cost per man day ---- \$5.35

\* \$508.45 Provided by Bureau of Entomology

Assignment of Costs by Activities

Travel

Time and subsistence of men in going from  
Northfork to control camp and return ----- \$100.00

Packing

Labor and Subsistence ----- 32.10  
Hire of Stock ----- 6.00  
Feed for Stock ----- 16.00  
Mileage and Gas ----- 27.40

Control Work

Labor and Subsistence ----- \$1,377.83  
Depreciation of Equipment ----- 20.00  
----- \$1,579.33

TABLE V. (CONT'D.)

	<u>Spring</u>	<u>Summer</u>	<u>Total</u>
Total Cost of Supplies -----	\$ 77.86	\$240.73	\$318.61
Cooks Salary -----	-	-	-
Total Subsistence Cost -----	-	-	-
Total No. Man days in Camp -----	85	250	335
Cost per Man day -----	.92	.96	.95
Man days worked -----	84	187	271
Cost per Man day Worked -----	.92	1.28	1.17

CHECK CRUISING - NORTHFORK DISTRICT

Area Covered ----- 88,320 Acres  
Total No. Trees Marked ----- 696  
Total Volume Marked ----- 1,899,140 Ft. B.M.  
Total Cost of Check Cruising ----- \$347.37

Detail of Costs

Salaries ----- \$290.00  
Field Expense ----- \$ 57.37  
Total ----- \$347.37

TABLE VI.

SUMMARY OF EXPERIMENTAL WORK - SEASON OF 1924.

Unit Number	26 A.	26 B	26 C	Total
Name	Logan	Forked Meadow	West Chiquito	
Character of Work Done	Spring Work	Spring and Summer	Spring Work	
Acreage	5.200	3.320	5.360	19.120
Stand B.M.	43,520.000	36,894.000	69,120.000	210,974.000
Volume Killed - 1923	89.370	149.090	262.060	500.520
Total Time on Unit in Man Days Cruising and Treating	21.4	94.6	20.	136.
% of Time to Total Time on Area	15.7%	69.6%	14.7%	100.%
Total Cost	\$268.50	\$1,075.27	\$235.56	\$1,579.33
Volume B.M. Treated	25.620	135.440	21.910	182.970
Cost Per B.M.	\$10.48	\$7.93	\$10.75	\$8.63
Cost per Acre of Cruising and Treating	.051	.32	.04	.082

CRUISING COSTS

No. Trees Marked	106	180	209	495
Time in Man Days	5	18	6	29
Cost for Unit	\$26.75	\$96.30	\$32.10	\$155.15
Cost per Acre	.005	.029	.006	.0081